

## IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

### Listing of Claims

1. (Currently Amended) A data multiplexer for performing time division multiplexing of a plurality of bit streams, said data multiplexer comprising:

an extracting means for extracting access unit information necessary for multiplexing processing from each of said plurality of bit streams;

a first calculating means for calculating a time division multiplexing cycle for each of said plurality of bit streams, such that a separator separates multiplexed data by a specified method on the basis of said information extracted by said extracting means; and

a multiplexing means for performing time division multiplexing of said plurality of bit streams on the basis of a result calculated by said first calculating means; and,

wherein different multiplexing cycle equations are used by said first calculating means to calculate multiplexing cycles of each of said plurality of bit streams, said different multiplexing cycle equations derived using rates of transfer of data between buffers according to a virtual decoder model,

wherein said multiplexing means calculates an amount of available space in said buffers based on data size of said plurality of bit streams and outputs a result to said first calculation means; and

wherein said access unit information includes picture coding type, access unit length and decoding time

a second calculating means for calculating a data occupancy rate of a virtual data buffer of said separator,

wherein said multiplexing means determines an order in which said plurality of bit streams are multiplexed on the basis of the data occupancy rate of said virtual data buffer calculated by said second calculating means.

2. (Cancelled)

3. (Currently Amended) A data multiplexing method for a data multiplexer performing time division multiplexing of a plurality of bit streams, said method comprising the steps of:

extracting access unit information necessary for multiplexing processing from each of said plurality of bit streams;

calculating a time division multiplexing cycle for each of said plurality of bit streams, such that a separator separates multiplexed data by a specified method on the basis of said information extracted by processing at said extracting step;

performing time division multiplexing of said plurality of bit streams on the basis of a result calculated by processing at said calculating step, and

~~wherein different multiplexing cycle equations are used in said calculating step to calculate multiplexing cycles of each of said plurality of bit streams, said different multiplexing cycle equations derived using rates of transfer of data between buffers according to a virtual decoder model, and~~

~~determining an amount of available space in said buffers based on data size of  
said plurality of bit streams;~~

~~wherein said access unit information includes picture coding type, access unit  
length and decoding time~~

~~a second calculating step for calculating a data occupancy rate of a virtual data  
buffer of said separator,~~

~~wherein said multiplexing determines an order in which said plurality of bit  
streams are multiplexed on the basis of the data occupancy rate of said virtual data buffer  
calculated by the second calculating step.~~

4. (Currently Amended) A program for a data multiplexer performing time  
division multiplexing of a bit stream, which is recorded on a recording medium readable by a  
computer, said program comprising the steps of:

extracting access unit information necessary for multiplexing processing from  
each of said plurality of bit streams;

calculating a time division multiplexing cycle for each of said plurality of bit  
streams, such that a separator separates multiplexed data by a specified method on the basis of  
said information extracted by processing at said extracting step;

performing time division multiplexing of said plurality of bit streams on the basis  
of a result calculated by processing at said calculating step, and

~~wherein different multiplexing cycle equations are used in said calculating step to  
calculate multiplexing cycles of each of said plurality of bit streams, said different multiplexing~~

~~cycle equations derived using rates of transfer of data between buffers according to a virtual decoder model, and~~

~~determining an amount of available space in said buffers based on data size of said plurality of bit streams,~~

~~wherein said access unit information includes picture coding type, access unit length and decoding time~~

~~a second calculating step for calculating a data occupancy rate of a virtual data buffer of said separator,~~

~~wherein said multiplexing determines an order in which said plurality of bit streams are multiplexed on the basis of the data occupancy rate of said virtual data buffer calculated by the second calculating step.~~

5. (Previously Presented) The data multiplexer as claimed in claim 1,  
wherein

a bit stream is a video stream.

6. (Previously Presented) The data multiplexer as claimed in claim 1,  
wherein

a bit stream is an audio stream.

7. (Previously Presented) The data multiplexer as claimed in claim 1,  
wherein

a bit stream is a system data stream.

8. (Previously Presented) The data multiplexer as claimed in claim 1,

wherein

said specified method is a leak method that is used to transfer said plurality of bit streams between buffers.

9. (Previously Presented) The data multiplexer as claimed in claim 1,

wherein

said specified method is a vbv-delay method that is used to transfer said plurality of bit streams between buffers.

10. (Previously Presented) The data multiplexer as claimed in claim 1, further

comprising:

a multiplexing scheduler means for generating schedule information by using said access unit information.

11. (Previously Presented) The data multiplexing method as claimed in claim

3, further comprising the steps of:

generating schedule information from a multiplexing scheduler means by using said access unit information.